

CLAIMS

1 A process for the fabrication of a semiconductor  
2 package, which comprises the following steps:  
3       1A) forming wiring on one side of a conductive temporary  
4 supporting member;  
5       1B) mounting a semiconductor device on said conductive  
6 temporary supporting member on which said wiring has been  
7 formed, and then electrically connecting a terminal of said  
8 semiconductor device with said wiring;  
9       1C) sealing said semiconductor device with resin;  
10      1D) removing said conductive temporary supporting member  
11 to expose said wiring;  
12      1E) forming an insulating layer over said exposed wiring  
13 pattern at an area other than position where an external  
14 connection terminal is to be formed; and  
15      1F) forming said external connection terminals on said  
16 wiring pattern at said positions where said insulating layer has  
17 not been formed.

1        2. A process for the fabrication of a semiconductor  
2 package, which comprises the following steps:  
3            2A) forming wiring on one side of a conductive temporary  
4 supporting member;  
5            2B) forming an insulating supporting member over said one  
6 side of said conductive temporary supporting member, said one  
7 side carrying said wiring formed thereon;

8 .       2C) removing said conductive temporary supporting member  
9       to transfer said wiring pattern onto said insulating supporting  
10      member;

11       2D) removing said insulating supporting member at  
12      positions where an external connection terminal is to be formed  
13      for said wiring pattern, whereby a through-holes is formed for  
14      said external connection terminal;

15       2E) mounting a semiconductor device on said insulating  
16      supporting member on which said wiring has been transferred, and  
17      then electrically connecting a terminal of said semiconductor  
18      device with said wiring;

19       2F) sealing said semiconductor device with resin; and

20       2G) forming, in said through-hole for said external  
21      connecting terminal, said external connection terminal so that  
22      said external connection terminal is electrically connected to  
23      said wiring.

1       3. A process for the fabrication of a semiconductor  
2      package, which comprises the following steps:

3       3A) forming wiring on one side of a conductive temporary  
4      supporting member;

5       3B) mounting a semiconductor device on said conductive  
6      temporary supporting member on which said wiring has been  
7      formed, and then electrically connecting a terminal of said  
8      semiconductor device with said wiring;

9       3C) sealing said semiconductor device with resin;

10. 3D) removing said conductive temporary supporting member  
11. at an area other than position where an external connection  
12. terminal for said wiring is to be formed, whereby said external  
13. connection terminal made from said conductive temporary  
14. supporting member are formed; and  
15. 3E) forming an insulating layer at said area other than said  
16. position of said external connection terminal.

1. 4. A process for the fabrication of a semiconductor  
2. package, which comprises the following steps:

3. 4A) forming an wiring on one side of a conductive temporary  
4. supporting member;
5. 4B) mounting a semiconductor device on said conductive temporary  
6. supporting member on which said wiring has been  
7. formed, and then electrically connecting a terminal of said  
8. semiconductor device with said wiring;
9. 4C) sealing said semiconductor device with resin;
10. 4D) forming a metal pattern, which is different in  
11. conditions for removal from said conductive temporary supporting  
12. member, on another side of said conductive temporary supporting  
13. member, said another side being opposite to said one side where  
14. said semiconductor device has been mounted, at a position where  
15. an external connection terminal for said wiring patterns is to be  
16. formed; and
17. 4E) removing said conductive temporary supporting member  
18. at an area other than said position where said metal pattern has

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19 been formed.

1       5. A process for the fabrication of semiconductor packages,  
2 which comprises the following steps:

3       5A) forming plural sets of wiring on one side of an  
4 insulating supporting member;

5       5B) removing said insulating supporting member at  
6 positions where external connection terminals for said wiring  
7 are to be formed, whereby through-holes for said external  
8 connection terminals are provided;

9       5C) mounting semiconductor devices on said insulating  
10 supporting member on which said plural sets of wiring have been  
11 formed, and then electrically connecting terminals of said  
12 semiconductor devices with said wiring, respectively;

13       5D) sealing said semiconductor devices with resin;

14       5E) forming, in said through-holes for said external  
15 connection terminals, said external connection terminals so that  
16 said external connection terminals are electrically connected to  
17 said wiring; and

18       5F) separating the resultant assembly into individual  
19 semiconductor packages.

1       6. A process for the fabrication of semiconductor packages,  
2 which comprises the following steps:

3       6A) forming plural sets of wiring on one side of a  
4 conductive temporary supporting member;

5           6B) cutting apart said conductive temporary substrate so  
6       that said plural sets of wiring formed on said conductive  
7       temporary supporting member are divided to include a  
8       predetermined number of wiring per unit, and then fixing on a  
9       frame said separated conductive temporary supporting member  
10      with said wiring formed thereon;

11       6C) mounting semiconductor devices on said conductive  
12      temporary substrates on which said wiring have been formed, and  
13      then electrically connecting terminals of said semiconductor  
14      devices with said wiring, respectively;

15       6D) sealing said semiconductor devices with resin;

16       6E) removing said conductive temporary substrate to expose  
17      said wiring;

18       6F) forming an insulating layer over said exposed wiring  
19      patterns at areas other than positions where external connection  
20      terminals are to be formed;

21       6G) forming said external connection terminals at said  
22      positions where said insulating layer for the wiring has not been  
23      formed; and

24       6H) separating the resultant assembly into individual  
25      semiconductor packages.

1           7. A process for the fabrication of semiconductor packages,  
2       which comprises the following steps:

3       7A) forming plural sets of wiring on one side of an  
4       insulating supporting member;

5           7B) removing said insulating supporting member at  
6         positions where external connection terminals for said wiring are  
7         to be formed, whereby through-holes for said external connection  
8         terminals are provided;

9           7C) cutting apart said insulating supporting member so that  
10      said plural sets of wiring formed on said insulating supporting  
11      member are divided to include a predetermined number of wiring  
12      per unit, and then fixing on a frame said separated insulating  
13      supporting member with said wiring formed thereon;

14          7D) mounting semiconductor devices on said insulating  
15      supporting members on which said wiring have been formed, and  
16      then electrically connecting terminals of said semiconductor  
17      devices with said wiring, respectively;

18          7E) sealing said semiconductor devices with resin;

19          7F) forming, in said through-holes for said external  
20      connection terminals, said external connection terminals so that  
21      said external connection terminals are electrically connected to  
22      said wiring; and

23          7G) separating the resultant assembly into individual  
24      semiconductor packages.

1           8. A process for the fabrication of a semiconductor package  
2      provided with a single layer of wiring, one side of said wiring  
3      having a first connecting function of being connected with a  
4      semiconductor device and an opposite side of said wiring having a  
5      second connecting function of being to be connected to external

6        wiring, which comprises the following steps 8A, 8B, 8C and 8D:

7            8A) working a heat-resistant insulating base material  
8        having a metal foil, thereby forming said metal foil into plural  
9        sets of wiring patterns;

10          8B) forming a hole at a position, for exhibiting said second  
11       connecting function which is to be formed in a subsequent step,  
12       so that said hole extends from a side of said insulating base  
13       material to said wiring patterns;

14          8C) bonding a frame base material, which makes an opening  
15       through a predetermined portion thereof, to desired position on a  
16       surface of said wiring patterns and a surface of said insulating  
17       base material, the latter surface being located adjacent to said  
18       wiring patterns, respectively; and

19          8D) mounting said semiconductor device, electrically  
20       connecting a terminal of said semiconductor device with said  
21       wiring pattern, and then sealing said semiconductor device with  
22       resin.

1            9. A process for the fabrication of semiconductor packages  
2       provided with a single layer of wiring, one side of said wiring  
3       having a first connecting function of being connected with a  
4       semiconductor device and an opposite side of said wiring having a  
5       second connecting function of being connected to external wiring,  
6       which comprises the following steps 9A, 9B, 9C and 9D:

7            9A) working a heat-resistant insulating base material  
8       having a metal foil, thereby forming said metal foil into plural

9 sets of wiring patterns;

10 9B) forming a hole at a position for exhibiting said second  
11 connecting function which is to be formed in a subsequent step,  
12 so that said hole extend from a side of said insulating base  
13 material to said wiring patterns;

14 9C) bonding a second insulating base material, which makes  
15 an opening through a predetermined portion thereof, to a desired  
16 position on a surface of said wiring patterns and a surface of said  
17 insulating base material, the latter surface being located  
18 adjacent to said wiring patterns, respectively, whereby an  
19 insulating supporting member is formed;

20 9D) cutting apart said insulating supporting member so that  
21 said plural sets of wiring formed on said insulating supporting  
22 member are divided to include a predetermined number of wiring  
23 per unit, and then fixing on a frame said separated insulating  
24 supporting member with said wiring formed thereon; and

25 9E) mounting said semiconductor device, connecting a  
26 terminal of said semiconductor device with said wiring, and then  
27 sealing said semiconductor device with resin.

1 10. A process for the fabrication of semiconductor  
2 packages, which comprises the following steps:

3 10A) forming plural sets of wiring on one side of a  
4 supporting member;

5 10B) mounting plural semiconductor devices on said  
6 supporting member on which said wiring have been formed, and

7       then electrically connecting terminals of said semiconductor  
8       devices with said wiring;

9       10C) subjecting said plural sets of electrically-connected  
10      semiconductor device and wiring to gang sealing with resin;

11       10D) removing desired portions of said supporting member  
12      to expose predetermined portions of said wiring, and forming  
13      external connection terminals so that said external connection  
14      terminals are electrically connected to said exposed wiring; and

15       10E) separating the resultant assembly into individual  
16      semiconductor packages.

1           11. The fabrication process of semiconductor packages  
2      according to any one of claims 1 to 10, wherein subsequent to the  
3      sealing of said semiconductor device or devices with said resin, a  
4      hardened product of said sealing resin is subjected to heat  
5      treatment.

1           12. A semiconductor package fabricated by the process  
2      according to any one of claims 1 to 11.

1           13. A process for the fabrication of a semiconductor device  
2      packaging frame, said frame being provided with plural  
3      semiconductor-device-mounting portions, portions connecting  
4      together said plural semiconductor-device-mounting portions, and  
5      a registration mark portion, which comprises the following steps:

6           (a) forming wiring for said semiconductor-device-mounting

7 portions on a conductive temporary substrate,  
8 (b) transferring said wiring onto a resin substrate, and  
9 (c) etching off said conductive temporary substrate;  
10 wherein upon etching off said conductive temporary  
11 substrate in step (c), said conductive temporary substrate partly  
12 remains to form some of said connecting portions.

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